

METHOD OF FORMING A READ SENSOR USING PHOTORESIST STRUCTURES
WITHOUT UNDERCUTS WHICH ARE REMOVED USING CHEMICAL-
MECHANICAL POLISHING (CMP) LIFT-OFF PROCESSES

5

ABSTRACT OF THE DISCLOSURE

A method of making a read sensor which defines its stripe height before its trackwidth using photoresist layers formed without undercuts is disclosed. The photoresist layers are removed using chemical-mechanical polishing (CMP) lift-off techniques instead of using conventional solvents. In particular, a first photoresist layer is formed in a central region over a plurality of read sensor layers. End portions of the read sensor layers around the first photoresist layer are removed by ion milling to define the stripe height for the read sensor. Next, insulator layers are deposited where the end portions of the read sensor layers were removed. The first photoresist layer is then removed through mechanical interaction with a CMP pad. In subsequently defining the trackwidth for the read sensor, a second photoresist layer is formed in a central region over the remaining read sensor layers. End portions of the read sensor layers around the second photoresist layer are then removed by ion milling to define the trackwidth for the read sensor. Next, hard bias and lead layers are deposited where the end portions of the read sensor layers were removed. The second photoresist layer is then removed through mechanical interaction with the CMP pad. Preferably, protective layers (e.g. carbon) between the photoresist layers and the read sensor layers are formed prior to photoresist removal. Thus, problems including those inherent with use of photoresist structures having undercuts are eliminated.